

REMARKS

This application is believed in condition for allowance and reconsideration is respectfully requested.

Status of the Claims

Claim 20 is amended. Support may be found, for example, in the description of Figure 6, line 20 of page 5 of the originally filed specification.

Claims 20-39 remain in this application.

Claims 29-38 remain withdrawn from consideration for being directed to a non-elected invention.

Claim Rejections-35 USC §103

Claims 20 and 22-28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over VOLLMAR et al. US 6,162,556 (VOLLMAR) in view of KOGA US 6,003,634(KOGA) and DECKMAN et al. US 6,830,596 (DECKMAN).

Claims 21 and 39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over VOLLMAR in view of KOGA and DECKMAN , and further in view of LIO et al. US 20020068204 (LIO).

These rejections are respectfully traversed for the reasons below.

Independent claim 20 requires that the hydrogen being combusted with the oxygen fed to the other side of the membrane

and is discharged from this other side of said membrane, wherein the feed to the one side of the membrane comprises anode off-gas from a fuel cell, and the discharge from this other side of said membrane is fed to said fuel cell.

VOLLMAR was offered for teaching the conversion of CO (in a feed from the anode side of a fuel cell(4)) and water into hydrogen (shift reaction), wherein the feed (via conduit 10) to the shift reactor (30) comprises an anode off-gas. The Official Action acknowledged that VOLLMAR fails to teach converting CO on one side of a membrane in the presence of water and passing H₂ through the membrane to be combusted with oxygen on the other side, as recited in claim 20.

Instead, VOLLMAR requires a hydrogen separation apparatus (36) downstream from the shift reactor, which serves to separate hydrogen from carbon dioxide. The hydrogen is delivered to an apparatus 70, which may be used a reservoir or a consumer of hydrogen, which in turn may be part of the overall fuel cell installation. See lines 5-8 in column 6 of VOLLMAR.

VOLLMAR further differs from the claimed invention in that there is no suggestion to feed the discharge from hydrogen combusted with oxygen on the other side of a membrane to the fuel cell.

KOGA was offered for teaching converting CO and H₂O into H₂ and CO₂.

DECKMAN was "merely used to indicate a usage of permeated hydrogen through a membrane (regardless of where the hydrogen came from) that comprises combustion in order to power a turbine or generate electricity".

Accordingly, this combination fails to teach, at the very least, H₂ passing through the membrane to be combusted with oxygen on the other side and to be discharged on the other side, and the discharge is fed to the fuel cell from which the anode-gas feed was obtained. To the contrary, the combination suggests a use separate from the fuel cell, e.g. to power a turbine or generate electricity.

LIO is not able to render these shortcomings of the VOLLMAR, KOGA and DECKMAN combination for reference purposes. LIO was relied on for suggesting air as the source of oxygen.

Thus, the proposed combination of VOLLMAR, KOGA and DECKMAN with or without LIO fails to render obvious the method of claim 20, and dependent claims 21-28 and 39.

Therefore, withdrawal of the rejection is respectfully requested.

Conclusion

In view of the amendment to the claims and the foregoing remarks, this application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

/Robert A. Madsen/
Robert A. Madsen, Reg. No. 58,543
209 Madison Street, Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

RAM/fb